

# PATENT ABSTRACTS OF JAPAN

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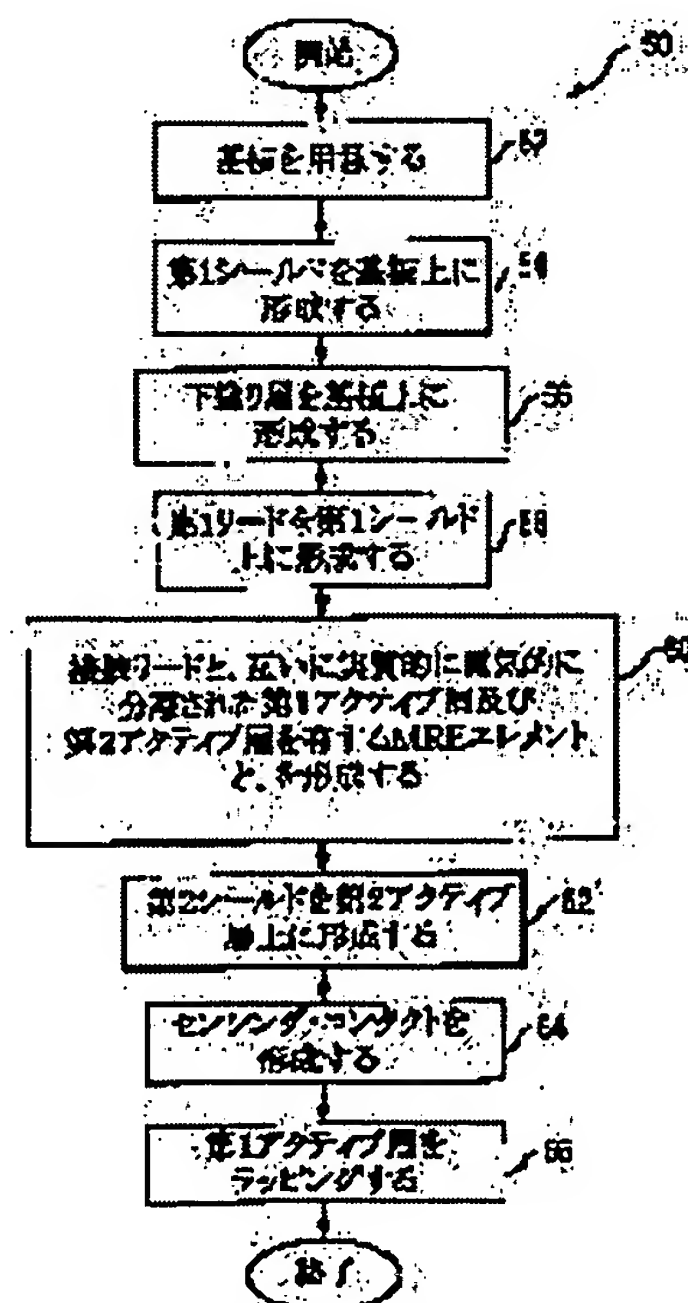
## (54) METHOD AND DEVICE FOR PROVIDING SPIN-DEPENDENT TUNNELLING EFFECT INTO READING HEAD

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a reading sensor with which formation of short-circuit path between plural electrically conductive layers of a reading sensor is prevented and interlayer boundary surface control of high grade is realized and a manufacturing method thereof.

SOLUTION: A SDT (spin-dependent tunnelling effect) reading sensor has a first ferromagnetic material (FM) layer and a second FM layer separated by an insulating layer. The first FM layer and the second FM layer are substantially electrically separated from each other. A sidewall of the SDT reading sensor substantially does not contain a conductive path between the first FM layer and the second FM layer. Further, a surface of the second FM layer extending substantially parallel to an air-bearing surface retreats from the air-bearing surface. A manufacturing method of the SDT reading sensor contains a process for depositing the first FM material layer, a process for depositing an intermediate insulating material layer on the first FM material layer and a process for depositing the second FM material layer on the intermediate insulating material layer.

The second FM material layer and the intermediate insulating material layer are subjected to etching. The etching is stopped before the first FM material layer is etched.



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